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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

THOMPSON, CAMIE S

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 11/26/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/673,340

Applicant(s)

KAGI ET AL.

Examiner

Camie S Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) 21-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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### DETAILED ACTION

1. Applicant's amendment and accompanying remarks filed on September 24, 2002 have been acknowledged.
2. Examiner acknowledges amended claim 1.
3. Examiner acknowledges applicant's explanation of relevance of reference WO 90/06226.
4. Applicant argues the restriction requirement that it would not require substantial searching for the addition of groups II and III. Under PCT rule 13.1, claim 1 is obvious over or anticipated by U.S. Patent No. 5,173,142 which makes Groups I and II unrelated, as they do not relate to a single general inventive concept. Under PCT rule 13.2, Groups I and II do not share the same technical feature with Group III. Groups I and II share the same technical feature: a structural component made of fiber reinforced thermoplastic. Group III relates to the use of a plastifying feeding device not required for Groups I and II.

Therefore, the restriction requirement is still deemed proper and is made **FINAL**.

5. The objection to the abstract is withdrawn to applicant's amended abstract.
6. The objection to the claims being on a separate sheet is withdrawn.

### *Claim Rejections - 35 USC § 112*

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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8. Claims 2, 6-8, 11-12 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. The phrase "at least partially" in claim 2 is a relative phrase that renders the claim indefinite. The phrase "at least partially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claim 2 does not distinctly point out that the interfaces of the structural component are connecting layers.

The phrase "in preference" in claim 6 is a relative phrase that renders the claim indefinite. The phrase "in preference" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claim 6 does not distinctly point out that the matrices of the long fiber reinforcement and the continuous fiber strands are identical.

The term "preferably" in claims 7 and 11 is a relative term that renders the claim indefinite. The term "preferably" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claim 7 does not distinctly point out that the long-fiber reinforcement must consist of glass. Claim 11 does not distinctly point out that the length of the fibers in the long-fiber reinforcement is within a range of 10-30 mm.

The term "resp." in claim 12 is a relative term that renders the claim indefinite. The term "resp." is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the

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scope of the invention. Claim 12 does not distinctly point out that the continuous fiber strands surround the load-bearing inserts.

The phrase "at least as great" in claim 16 is a relative phrase that renders the claim indefinite.

The phrase "at least as great" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claim 16 does not distinctly point out what the layer thickness is for the continuous fiber strands.

10. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 8 recites the broad recitation 45-50% by volume of fiber content for the continuous fiber strands, and the claim also recites 40%, which is the narrower statement of the range/limitation.

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11. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 11 recites the broad recitation of fiber length range of 10-30 mm for the fibers in the long-fiber reinforcement, and the claim also recites 5 mm, which is the narrower statement of the range/limitation.

### ***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-8 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billiu, U.S. Patent No. 5,173,142 in view of Guerrini et al., U.S. Patent No. 5,362,431.

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The Billiu reference discloses a structural body with at least two structural components wherein the components are made out of a first and second rigid, fiber reinforced thermoplastic matrix, whereby the first and second fiber, reinforced thermoplastic matrices are fused together to create a hollow section assembly as per instant claims 1, 3, 6, 12, 13, 19 and 20. See abstract and column 1, lines 17-24. Billiu does not disclose using a long-fiber reinforced thermoplastic matrix and continuous fiber strands with a thermoplastic matrix. However, Guerrini discloses using long-fiber reinforced thermoplastics for preparing shaped bodies. Guerrini also discloses using continuous fibers with a thermoplastic matrix because they prevent problems with thermosetting and increase mechanical load (column 1, lines 1-31).

The Billiu reference discloses the first and second fiber, reinforced thermoplastic matrices joined together by a fusion bond (see Figure 2; column 2, lines 66 to column 3, lines 1-7; and column 4, lines 34-41). Therefore, Billiu meets the claim limitations as in instant claims 2, 4, 14 and 15-18.

Neither the Billiu nor the Guerrini references disclose that the continuous fiber strands run in different directions as per instant claim 5. However, it is known in the art that continuous fiber strands that run in different directions in the thermoplastic matrix give rise to the increased mechanical properties as shown by column 1, lines 60-68 of Guerrini.

The Billiu reference does not disclose the matrices, the types of fibers or the fiber volume content as per instant claims 7 and 8. However, the Guerrini reference discloses using polypropylene, polyamides, polyimides, aliphatic polyester resins such as polyethylene terephthalate and polybutylene terephthalate, polycarbonates and polyether sulfones (see column 3, lines 12-31). Guerrini also discloses the use of carbon fibers or glass fibers for the continuous

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fiber strands and the long-fiber reinforcement (see column 3, lines 8-11). The Guerrini reference also discloses a fiber volume higher than 20% (see column 3, lines 34-37).

The Guerrini reference also discloses the fiber length size within a range of 2-10mm as instant claim 11(see column 4, lines 16-17). Therefore, it would be obvious to one of ordinary skill in the art to modify Billiu's structural component with carbon or glass fibers that provide greater reinforcement. It would also be obvious to include a volume higher than 20% and a fiber length size between 2 –10 mm because these amounts have been shown to improve the processibility of the fibers and higher mechanical strengths.

14. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Billiu, U.S. Patent No. 5,173,142 in view of Guerrini et al., U.S. Patent No. 5,362,431 and further in view of Cheshire, U.S. Patent No. 6,106,650.

The Billiu and Guerrini references are relied upon for claims 1-8 and 11-20 as above. Neither the Billiu nor the Guerrini references disclose that the continuous fiber strands are twisted. The Cheshire reference teaches a fiber-reinforced composite have fiber-reinforcing elements incorporated in a matrix. The Cheshire reference discloses that the continuous fibers in reinforced composites are twisted so that they are unable to slide relative to each other due to the friction between the fibers (see column 1, lines 41-49). Therefore, it would be obvious to one of ordinary skill in the art to use twisted, continuous fibers being motivated by decreasing elongation of the fibers under tension.



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15. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Billiu, U.S.

Patent No. 5,173,142 in view of Guerrini et al., U.S. Patent No. 5,362,431 and further in view of DellaVecchia, U.S. Patent No. 4,612,238.

The Billiu and Guerrini references are relied upon for claims 1-8 and 11-20 as above. Neither the Billiu nor the Guerrini references discloses at the continuous fiber strands in the fiber reinforced composite are needle-bonded, wrapped or enveloped by a braided tube. The DellaVecchia reference teaches a fiber reinforced thermoplastic composite containing reinforcing fibers in a thermoplastic matrix. The DellaVecchia reference discloses that the continuous fiber strands are needled-bonded so that the fiber strands are held together. Therefore, it would be obvious to one of ordinary skill in the art to use needle-bonded fiber strands as taught by DellaVecchia for the purpose of increasing the mechanical strength of the fiber composite.

### ***Response to Arguments***

16. Applicant's arguments filed September 24, 2002 have been fully considered but they are not persuasive. Applicant argues Guerrini teaches away from limitation of continuous fiber strands in the structural component. The Guerrini reference discloses that the fibers used in the long-fiber reinforcement are long-fiber continuous filaments as shown by the Guerrini reference in column 1, lines 54-60 and Example 1. Continuous long fibers or filaments are equivalent to strands. Applicant argues that Guerrini and Billiu references do not comprise continuous fiber strands in limitations b, c, d, e or f. Although the Billiu reference does not disclose using long fiber strands or filaments, Billiu is analogous art with Guerrini in that both reference disclose

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fiber reinforced structural composites. The Guerrini reference discloses that continuous fiber strands in a thermoplastic matrix give rise to the increased mechanical properties in column 1, lines 60-68. Therefore, the reason to combine the Guerrini reference and the Billiu reference is not without motivation.

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Camie S. Thompson whose telephone number is (703) 305-4488. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly, can be reached at (703) 308-0449. The fax phone numbers for the Group are (703) 872-9310 {before finals} and (703) 872-9311 {after finals}.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

CYNTHIA H. KELLY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

A handwritten signature in cursive script, appearing to read "Cynthia H. Kelly".